

50X1-HUM

MANUAL OF PONTON BRIDGE BUILDING. VOLUME II

50X1-HUM

CONFIDENTIAL

Lengths of Bridges, Rafts, and Landing Stages that Can Be Constructed from the Equipage of One, Two, and Three Platoons

a) Bridges that can be constructed with the equipage of one platoon:

Carrying Capacity of Bridge	Number of spans used in bridge				Length of adjustable hinge span gap, meters	Length of bridge, meters	Remarks
	Abutment spans	Floating spans	"Seka" spans	Hinge spans			
4.5-ton bridge (Figure 162)	2 ¹	5	1	1	4.65	64.85	1. There can also be one abutment span and one trestle span.
	2 ¹	5	2	-	-	68.00	
7-ton bridge (Figure 163)	2 ¹	3	1	1	4.65	48.85	2. One of the spans is 4 meters long.
	2 ¹	3 ²	2	-	-	48.00	3. One of the spans is 6 meters long.
12-ton bridge (Figure 164)	2 ¹	See Note below. 2 ³	1	1	3.85	40.05	4. One ponton is left over.
	1		2	-	-	36.00	

Note: The figure given in the book for the number of floating spans in the first type of 12-ton bridge is obviously incorrect. the given figure 23.⁴, should ostensibly read 2⁴ instead.

Bridges that can be constructed with the equipage of two platoons:

Carrying Capacity of bridge	Number of spans used in bridge				Length of adjustable hinge span gap, meters	Length of bridge,	Remarks
	Abutment spans	Floating spans	"Seka" spans	Hinge spans			
4.5-ton bridge (Figure 165)	2	11	-	2	9.30	109.70	Two trestle spans are left over; they can be used in whatever manner the shore permits.
	2	11	1	1	4.65	112.85	
	2	11	2	-	-	116.00	
7-ton bridge (Figure 166)	2	7 ¹	-	2	9.30	77.70	Two trestle spans are left over; they can be used in whatever manner the shore permits.
	2	7	1	1	4.65	80.85	
	2	7 ²	2	-	-	80.00	
12-ton bridge (Figure 167)	2	5 ³	-	2	7.70	60.10	Two trestle spans are left over and can be used in whatever manner the shore permits. There may also be two trestle spans in the bridge if the shore permits. In such a case there are 4 floating spans.
	2	5 ¹	1	1	3.85	64.05	
	2	5	2	-	-	68.00	

1. One ponton is left over. 2. One of the spans is 4 meters long. 3. Two pontons are left over; these can be used to build a 4-meter floating span, but if this is done there are then no trestle spans left over.

CONFIDENTIAL

CONFIDENTIAL

Bridges that can be constructed with the equipment of three platoons:

Carrying Capacity of bridge	Number of spans used in bridge				Length of adjustable hinge span gap, meters	Length of bridge, meters	Remarks
	Abutment spans	Floating spans	"Saka" spans	Hinge spans			
4.5-ton bridge (Figure 168)	2	17	-	2	9.30	157.70	Four trestle spans are left over; they can be used in whatever manner the shore permits.
	2	17	1	1	4.65	160.85	
	2	17	2	-	-	164.00	
7-ton bridge (Figure 169)	2	11 ¹	-	2	9.30	109.40	Four trestle spans are left over; they can be used in whatever manner the shore permits.
	2	11	1	1	4.65	112.85	
	2	11 ²	2	-	-	112.00	
12-ton bridge (Figure 170)	2	8 ³	-	2	7.70	84.10	Four trestle spans are left over and can be used in whatever manner the shore permits. There may also be four trestle spans in the bridge if the shore permits. In such a case there are seven floating spans.
	2	8 ¹	1	1	3.85	88.05	
	22	8	2	-	-	92.00	

1. One ponton is left over. 2. One of the spans is 4 meters long. 3. Two pontons are left over; these can be used to construct a 4-meter floating span, but if this is done there are then only two trestle spans left over.

CONFIDENTIAL

d) Landing stages and rafts that can be constructed with the equipage of one platoon:

Two landing stages having the following construction:	Number of rafts, dependent on carrying capacity and on the construction of the landing stages.		
	4.5-ton	7-ton	12-ton
1) An abutment span on each one.	6	4	3
2) A "seka" span on each one..	5	2	2
3) An abutment span on one and a "seka" span on the other.	5	3	2
4) An abutment span on one and on the other an abutment span, hinge span, and floating span.	4	2	1
5) A "seka" span on one and on the other an abutment span, a hinge span, and a floating span.	4	2	1

1. Since the landing stage ends at a trestle, a raft carrying a wheeled vehicles must use one more ponton than the weight of the vehicle would otherwise require (See Section 295, second paragraph).

CONFIDENTIAL

CONFIDENTIAL

- e) Landing stages and rafts that can be constructed with the
equipment of two platoons:

Four landing stages having the following construction:	Number of rafts, dependent on carrying capacity and on the con- struction of the landing stages.		
	4.5-ton	7-ton	12-ton
1) An abutment span on each one.	12	8	6
2) A "seka" span on each one.	10	5	4
3) Two have abutment spans, two have "seka" spans. ¹	11	6	5
4) Two have abutment spans, the other two both have abutment, hinge, and floating spans.	9	5	3
5) Two have "seka" spans, the other two both have abutment, hinge, and floating spans.	8	4	2

1. Since the landing stage ends at a trestle, a raft carrying wheeled
vehicles must use one more ponton than the weight of the vehicle
would otherwise require (See Section 295, second paragraph).

CONFIDENTIAL

CONFIDENTIAL

f) Landing stages and rafts that can be constructed with the
 equipment of three platoons:

Six landing stages having the following construction:	Number of rafts, dependent on carrying capacity and on the con- struction of the landing stages.		
	4.5-ton	7-ton	12-ton
1) An abutment span on each one. ¹	18	12	9
2) A "seka" span on each one.	15	8	6
3) Three have "seka" spans, three have abutment spans.	16	10	7
4) Three have abutment spans, the other three each have an abutment, hinge, and floating span.	13	8	5
5) Three have "seka" spans, the other three each have an abutment, hinge, and floating span.	12	6	3

1. Since the landing stage ends at a trestle, a raft carrying wheeled vehicles must use one more ponton than the weight of the vehicle would otherwise require (See Section 295, second paragraph).

CONFIDENTIAL

CONFIDENTIAL

The following are the captions of the illustrations on pages
290 - 300:

<u>Figure:</u>	<u>Title</u>
162	4.5-ton bridges that can be constructed with the equipage of one platoon.
163	7-ton bridges that can be constructed with the equipage of one platoon.
164	12-ton bridges that can be constructed with the equipage of one platoon.
165	4.5-ton bridges that can be constructed with the equipage of two platoons.
166	7-ton bridges that can be constructed with the equipage of two platoons.
167	12-ton bridges that can be constructed with the equipage of two platoons.
168	4.5-ton bridges that can be constructed with the equipage of three platoons.
169	7-ton bridges that can be constructed with the equipage of three platoons.
170	12-ton bridges that can be constructed with the equipage of three platoons.

(Note: In the bridges having hinge spans, the values given for "a" in the illustrations indicate the limits of the adjustable hinge span gap).

CONFIDENTIAL

CONFIDENTIAL**APPENDIX 4****A Bridge Company's Engineering Materiel.**

- A. Ponton Bridge Equipage,**
 excluding equipage of chests Nos. 12, 13, and 14, and the equipment
 in the mechanic's kit.

Description	Number Required
Oar (for ponton)	216
Oar (for assault boat)	54
Anchor	36
Anchor cable	36
Trestle shoe	12
Oarlock	216
Oarlock bag	36
Megaphone	6
Transverse balk	36
Transverse balk hanger	144
Roller-beam	42
Guard rail post	108
Two-meter rule	6
Deck ramp	3
Deck panel	30
Floating sill	3
Boathook, large	36
Boathook, small	54
Reel	36
Reel case	36
Tarpaulin, 2.4 x 4.5 meters	58

CONFIDENTIAL

CONFIDENTIAL

Description	Number Required
Equipment chest No. 1, empty	6
" " No. 2, empty	6
" " No. 3, empty	6
" " No. 4, empty	12
" " No. 5, empty	6
" " No. 6, "	6
" " No. 7, "	12
" " No. 8, ""	3
" " No. 9, "	36
" " No. 10, "	36
" " No. 11, "	36
" " No. 12, with equipment ..	18
" " No. 13, " " ..	1
" " No. 14, " " ..	1
Chess	9600
End chess	60
Line stake	24
Lantern	15
Abutment sill	6
Siderail clamp	312
Mechanic's kit, with tools	3
Marker lantern, red	9
Marker lantern, white	36
Sledge-hammer, about 7 kilograms	12
Grapnel	3
Hoist	12
Bunk beam	36

CONFIDENTIAL

CONFIDENTIAL

Description	Number Required
Bunk hanger	72
Outboard motor m/34.....	18
Outboard motor transporting rack	6
Outboard motor protecting cover	18
Trailer	36
Trailer spar	36
Trailer spar clamps	144
Mooring cable	72
Longitudinal lashing	24
Longitudinal lashing pin	24
Transverse lashing	12
Bollard	216
Marker buoy and its cable	54
Fuel tank, 15 liter, for outboard motor...	19
Fuel tank, 5 liter, for the lanterns	6
Pontoon	36
Trestle column	12
Trestle transom	6
Pump	36
Engine mount	18
Movement limiter	72
Movement limiter washer, 5 millimeters....	72
" " " 10 " 	72
" " " 20 " 	72
Tie rod (sway bracing)	6
Curb rail, .4 meter.....	96
" " , 2 meter	12

CONFIDENTIAL

-99-

CONFIDENTIAL

Description	Number Required
Assault boat	18
Hinge span balk	24
Leveller	6
Antifriction roller	36
Picket	60
Sidebeam, 4 meters	96
" 2 meters	24
Sidebeam clamp	60
Sidebeam seat	24
Sidebeam hanger	144
Marker	12
Capstan	36
Capstan support arm	36
Capstan support bracket	36
Balk clamp	270
Balk seat	54
Balk hanger	576
Balk, 4-meter	480
" 2-meter	60
Bailing scoop	18
4.5-liter Oil can,/for pusher-engine	18

CONFIDENTIAL

CONFIDENTIAL

B. Tools and other accessories.

Description	Quantity	Notes
Forge	1	1. Twelve additional units are in the K tool chests of the accessory equipment trucks.
Anvil	1	
Two-man saw	2	
Auger, 16-millimeter diameter ² ..	6	
Measuring line, steel, 120 meters long ²	3	2. In equipment chests No. 8 in the accessory equipment trucks.
Engineer's axe ³	70	
Iron bar	13	
Iron plate, 1 mm. thick, galvanized	10 sq. m.	
" " 1.25 mm. " "	10 " "	3. Six additional units are in the B tool chests of the accessory equipment trucks.
" " 2.0 " " ungalvanized	2 " "	
" " 3.0 " " "	2 " "	
" " 4.0 " " "	2 " "	
Mooring cable, 14 mm. diameter, 6.5-meter lengths	351 m.	
Gravel fork ³	70	
Grindstone	4	
Cotton-waste	10 kg.	
Tool chest B and tools	3	
" " I " " 	1	
" " J " " 	1	
" " K " " 	3	
Adhesive felt	1 roll	

CONFIDENTIAL

CONFIDENTIAL

Description	Quantity
The following items are included for the maintenance of the transport vehicles:	
The motor vehicle company's repair equipment chest ..	1
Towing winch	1
Fuel pump	2
20-liter distributing can	2
2 " " "	2
1 " " "	2
Charcoal	1 hektoliter
Funnel, large	2
Vaseline	10 kg.

CONFIDENTIAL

CONFIDENTIAL**C. Load arrangements.**

Load of an abutment span truck.

6 loads.

3-ton truck; minimum length of truck bed is 3 meters.

Number	Description	Quantity	Weight of one unit, kg	Total weight, kg.
	Ponton bridge equipage:			
P-803	Trestle shoe	2	26.0	52.0
P-818	Equipment chest No. 1, equipped, ...	1	135.0	135.0
P-820	" " No. 2, " ...	1	132.0	132.0
P-822	" " No. 3, " ...	1	143.0	143.0
P-824	" " No. 4, " ...	2	119.0	238.0
P-846	Chess	26	14.0	364.0
P-847	End chess	2	28.0	56.0
P-850	Abutment sill	1	180.0	180.0
P-870	Longitudinal lashing	4	25.0	100.0
P-872	Transverse lashing	2	30.0	60.0
P-876	Trestle column	2	80.0	160.0
P-877	Trestle transom	1	200.0	200.0
P-833	Tie rod (sway bracing)	1	20.0	20.0
P-884	Curb rail, 4-meter	2	38.0	76.0
P-885	" " 2-meter	2	18.0	36.0
P-888	Sidebeam, 4-meter	2	130.0	260.0
P-889	" 2-meter	2	73.0	146.0
P-900	Balk, 4-meter	10	54.0	540.0
P-901	" 2-meter	10	27.0	270.0

CONFIDENTIAL

CONFIDENTIAL

Number	Description	Quantity	Weight of one unit, kg.	Total weight, kg.
	Tools and other equipment of the engineer soldiers:			
P-175	Engineer's axe	1	2.2	2.2
P-260	Mooring cable ¹	5	1.0	5.0
P-263	Gravel fork	1	2.7	2.7
P-817	Tarpaulin 2.4..x.4.5. meters	1	7.0	7.0

Total weight of load 3184.9

- of
1. Two/these cables are used to tie down the load, the other three being part of the regular equipage.

Figure 176 on page 315 illustrates the way in which the abutment span truck is loaded. The items are numbered in pencil in the book and listed here accordingly:

- | | |
|----------------------------------|---|
| (1) Abutment span | (8) Equipment chests Nos. 3, 4, 4, 1, 2. |
| (2) Tie rod (sway bracing) | (9) Longitudinal and transverse lashings. |
| (3) 4-meter balk (10 pieces) | (10) 2-meter balk (10 pieces) |
| (4) Trestle columns (2) | (11) Curb rails (4 pieces) |
| (5) 4-meter sidebeams (2 pieces) | (12) 2-meter sidebeams (2 pieces) |
| (6) Trestle transom | |
| (7) Chess | |

CONFIDENTIAL

CONFIDENTIAL

Load of a "seka" span truck.

6 loads.

2-ton truck; minimum length of truck bed is 3 meters.

Number	Description	Quantity	Weight of one unit, kg.	Total weight, kg.
	Ponton bridge equipage:			
P-809	Roller-beam	1	20.0	20.0
P-810	Guard rail post	6	10.0	60.0
P-826	Equipment chest No. 5, equipped	1	90.0	90.0
P-828	" " No. 6, "	1	100.0	100.0
P-846	Chess	19	14.0	266.0
P-847	End chess	1	28.0	28.0
P-884	Chrb rail, 4-meter	2	38.0	76.0
P-888	Sidebeam, 4-meter	2	130.0	260.0
P-889	" 2-meter	2	73.0	146.0
P-900	Balk, 4-meter	10	54.0	540.0
	Tools and other equipment of the engineer soldiers:			
P-175	Engineer's axe	1	2.2	2.2
P-260	Mooring cable	2	1.0	2.0
P-263	Gravel fork	1	2.7	2.7
P-817	Tarpaulin, 2.4 x 4.5 meters	1	7.0	7.0

Total weight of load

1599.9

CONFIDENTIAL

CONFIDENTIAL

Figure 177 on page 316 illustrates the way in which the "seka" span truck is loaded. The items are numbered in pencil in the book and listed here accordingly:

- | | |
|---------------------------------|-------------------------------|
| 1) Equipment chest No. 6 | 6) Chess (20 pieces) |
| 2) 2-meter sidebeams (2 pieces) | 7) Equipment chest No. 5. |
| 3) 4-meter sidebeams (2 pieces) | 8) Hinge span balk (4 pieces) |
| 4) Roller-beam | 9) 4-meter balk (10 pieces) |
| 5) Guard rail posts (6). | |

Load of a hinge span truck.

3 loads.

2-ton truck; minimum length of truck bed is 4 meters.

Number	Description	Quantity	Weight of one unit, kg.	Total weight, kg.
	Ponton bridge equipage:			
P-907	Deck ramp	1	60.0	60.0
P-905	Deck panel	10	65.0	65.0
P-906	Floating sill	1	58.0	58.0
P-904	Hinge span balk	8	152.0	1216.0
	Tools and other equipment of the engineer soldiers:.....			
P-175	Engineer's axe	1	2.2	2.2
P-260	Mooring cable	2	1.0	2.0
P-263	Gravel fork	1	2.7	2.7
P-817	Tarpaulin, 2.4 x 4.5 meters	1	7.0	7.0

Total weight of load

3184.9

CONFIDENTIAL

CONFIDENTIAL

Load of an accessory equipment truck.

3 loads.

1-2 ton truck; minimum length of truck bed is 2.5 - 3 meters.

Number	Description	Quantity	Weight of one unit, kg.	Total weight, kg.
	Ponton bridge equipage:			
P-812	Two-meter rule	2	1.0	2.0
P-830	Equipment chest No. 7, equipped	4	136.0	544.0
P-832	Equipment chest No. 8, equipped	1	75.0	75.0
P-846	Chess	2	14.0	28.0
P-847	End chess	2	28.0	56.0
P-848	Line stake	8	3.5	28.0
P-855	Grapnel	1	12.0	12.0
P-908	Leveller	2	24.0	48.0
	Tools and other equipment of the engineer soldiers:			
P-175	Engineer's axe ¹	1	2.2	2.2
P-201	Iron bar	4	7.0	28.0
P-260	Mooring cable	2	1.0	2.0
P-263	Gravel fork ¹	1	2.7	2.7
P-278	Grindstone	1	15.0	15.0
P-299	Tool chest B, equipped	1	45.0	45.0
P-371	" " K, "	1	66.0	66.0
P-817	Tarpaulin, 2.4 x 4.5 meters	1	7.0	7.0

Total weight of load

960.9

1. Two additional units in tool chest B.

CONFIDENTIAL

-107-

CONFIDENTIAL

Load of a ponton truck.

36 loads.

3-ton truck; minimum length of truck bed is 3 meters.

Number	Description	Quantity	Weight of one unit, kg.	Total weight, kg.
	Ponton bridge equipage:			
P-801	Anchor	1	65.0	65.0
P-802	Anchor cable	1	40.0	40.0
P-807	Transverse balk	1	87.0	87.0
P-809	Roller-beam	1	20.0	20.0
P-810	Guard rail post	2	10.0	20.0
P-815	Reel	1	6.0	6.0
P-816	Reel case	1	24.0	24.0
P-834	Equipment chest No. 9, equipped	1	142.0	142.0
P-836	" " No. 10, "	1	110.0	110.0
P-838	" " No. 11, "	1	140.0	140.0
P-846	Chess	19	14.0	266.0
P-847	End chess	1	28.0	28.0
P-858	Bunk beam	1	75.0	75.0
P-867/	Trailer spar and trailer spar			
868	clamps	1	98.0	98.0
P-874	Marker buoy with cable	1	24.0	24.0
P-878	Pump	1	8.0	8.0
P-884	Curb rail, 4-meter	2	38.0	76.0
P-888	Sidebeam, 4-meter	2	130.0	260.0
P-896	Capstan support bracket	1	6.0	6.0
P-900	Balk, 4-meter	10	54.0	540.0

CONFIDENTIAL

-108-

CONFIDENTIAL

(Load of a ponton truck, -continued)

Number	Description	Quan- tity	Weight of one unit, kg.	Total weight, kg.
	Tools and other equipment of the engineer soldiers:			
P-175	Engineer's axe	1	2.2	2.2
P-260	Mooring cable	2	1.0	2.0
P-263	Gravel fork	1	2.7	2.7
P-817	Tarpaulin, 2.4 x 4.5 meters	1	7.0	7.0

Total weight of load

2048.9

Note: The trailers are attached to the ponton trucks. The weight of a trailer (No. P-866) is 270 kilograms.

Figure 178 on page 319 illustrates the way in which the ponton truck is loaded (without the trailer). The items are numbered in pencil in the book and listed here accordingly:

- | | |
|----------------------------|-----------------------------|
| (1) Equipment chest No. 11 | 11) Marker buoy |
| 2) Reel case | 12) Pump |
| 3) Roller-beam | 13) Equipment chest No. 10 |
| 4) Chess (10 pieces) | 14) Equipment chest No. 9 |
| 5) 4-meter balk (5 pieces) | 15) Chess (10 pieces) |
| 6) 4-meter curb rail | 16) 4-meter balk (5 pieces) |
| 7) 4-meter sidebeams | 17) 4-meter curb rail |
| 8) Trailer spar | 18) Transverse balk |
| 9) Guard rail posts (2) | 19) Bunk beam |
| 10) Anchor | |

CONFIDENTIAL

CONFIDENTIAL**Load of a trailer.**

(Attached to a ponton truck.)

Number	Description	Quan- tity	Weight of one unit, kg.	Total weight, kg.
P-875	Ponton	1	750.0	750.0
P-800	Oar (for ponton)	6	8.0	48.0
P-804/ 805	Oarlock, in oarlock bag	6	1.0	6.2
P-813	Boathook, large	1	6.0	6.0
P-814	" small	1	3.0	3.0
P-869	Mooring line	2	4.5	9.0
P-873	Bollard	6	3.1	18.6
P-260	Lashing line	4	1.0	4.0

Total weight of load

844.8

The oars and boathooks are lashed to the large ribs of the ponton with a lashing line, in the same manner that is followed when the ponton is fitted out for construction of a bridge. The oarlock bag is lashed to the gunwale railing (See Figure 43 on page 64).

CONFIDENTIAL

CONFIDENTIAL

Load of an assault boat truck.

6 loads.

2-ton truck; minimum length of truck bed is 4 meters.

Number	Description	Quantity	Weight of one unit, kg.	Total weight, kg.
	Ponton bridge equipage:			
P-861-1	Oar (for an assault boat)	9	6.0	54.0
P-814	Boathook, small	3	3.0	9.0
P-840	Equipment chest No. 12, equipped	3	12.0	36.0
P-860	Pusher-engine m/34	3	132.0	396.0
P-863	Pusher-engine carrying rack	1	190.0	190.0
P-864	Protective cover for pusher-engine...	3	2.0	6.0
P-874	Marker buoy with cable	3	24.0	72.0
P-862	Fuel tank for pusher-engine, ¹⁵ liter	3	15.0	45.0
P-861-2	Engine mount.....	3	8.0	24.0
P-861	Assault boat	3	300.0	900.0
P-861-3	Thwart	3	10.0	30.0
P-221-10	Bailing scoop	3	1.0	3.0
P-865	Oil can, 4.5-liter, for pusher-engine	3	5.0	15.0
	Tools and other equipment of the engineer soldiers:			
P-175	Engineer's axe	1	2.2	2.2
P-260	Lashing line ¹	11	1.0	11.0
P-263	Gravel fork	1	2.7	2.7

Total weight of the load

1795.9

1. Two pieces are used to tie down the load and 9 pieces are used as mooring lines on the assault boats.

CONFIDENTIAL

-111-

CONFIDENTIAL

Figure 179 on page 321 illustrates a loaded assault boat truck. As indicated in the illustration (also pointed out earlier), the truck bed must be at least 4 meters long.

Figure 180 on page 322 illustrates a loaded pusher-engine carrying rack.

The oars and boathooks are under the rack.

The marker buoys, the tool chests, and the oil cans rest on the bed of the truck.

The fuel tanks and the engine mounts are on top of the oars and boathooks.

The thwarts are on top of the cross-braces of the rack and on top of the marker buoys.

Of the three pusher-engines that are loaded on the rack, the two engines that are put in the side positions in the rack are placed first, with their propellers toward the rear, and then the third engine is placed with its propeller toward the front.

(For clarity, the pusher-engines have been left out of the illustration).

CONFIDENTIAL

CONFIDENTIAL

Load of the repair equipment truck.

One load

3-ton truck; truck bed is 2 -3 meters long.

Number	Description	Quantity	Weight of one unit, kg.	Total weight, kg.
P-1	Forge	1	70.0	70.0
P-6	Anvil	1	40.0	40.0
P-27	Two-man saw	1	1.8	1.8
P-844	Equipment chest No. 14, equipped	1	70.0	70.0
P-175	Engineer's axe	1	2.2	2.2
P-201	Iron bar	1	7.0	7.0
P-354	Iron plate, 1 mm. thick, galvanized ...	10m. ²	7.8	78.0
"	" " 1.25 " " " ...	"	9.8	98.0
"	" " 2 " " ungalvanized..	2	15.6	31.2
"	" " 3 " " "	2	23.5	47.0
"	" " 4 " " "	2	31.3	62.6
P-260	Lashing line	2	1.0	2.0
P-263	Gravel fork	1	2.7	2.7
P-278	Grindstone	1	15.0	15.0
P-291	Cotton-waste	10kg.	-	10.0
P-313	Tool chest I, equipped	1	42.0	42.0
P-315	" " J "	1	45.0	45.0
P-343	Adhesive felt	1 roll	5.0	5.0
P-817	Tarpaulin,..2.4 x 4.5 meters	1	7.0	7.0
	For maintenance of repair equipment:			
	Motor company's repair chest	1	200.0	200.0
	Towing winch	1	900.0	900.0
	Charcoal	1 hl.	40.0	40.0
	Vaseline	10 kg	-	10.0

Total weight of load

1788.5

CONFIDENTIAL

-113-

CONFIDENTIAL

Fuel truck for assault boat platoon.

One truck.

2-ton truck; length of truck bed is 2.5 - 3 meters.

Number	Description	Quantity	Weight of one unit, kg.	Total weight, kg.
P-842	Equipment chest No. 13, equipped	1	80.0	80.0
P-175	Engineer's axe	1	2.2	2.2
P-862	Fuel tank for pusher-engine, 15-liter.	1	15.0	15.0
P-260	Lashing line	2	1.0	2.0
P-263	Gravel fork	1	2.7	2.7
P-817	Tarpaulin, 2.4 x 4.5 meters	1	7.0	7.0
	For the maintenance of the transportation equipment:			
	Fuel pump	1	4.0	4.0
	20-liter distributing can	1	4.0	4.0
	2-liter " "	1	1.0	1.0
	1-liter " "	1	0.5	0.5
	Funnel, large	1	0.5	0.5

CONFIDENTIAL

CONFIDENTIAL

Fuel truck for services platoon.

One truck.

2-ton truck; length of truck bed is 2.5 - 3 meters.

Number	Description	Quantity	Weight of one unit, kg.	Total weight, kg.
P-175	Engineer's axe	1	2.2	2.2
P-260	Lashing line	2	1.0	2.0
P-263	Gravel fork	1	2.7	2.7
P-817	Tarpaulin, 2.4 x 4.5 meters	1	7.0	7.0
	For the maintenance of the transportation equipment:			
	Fuel pump	1	4.0	4.0
	20-liter distributing can	1	4.0	4.0
	2-liter " "	1	1.0	1.0
	1-liter " "	1	0.5	0.5
	Funnel, large	1	0.5	0.5

CONFIDENTIAL

CONFIDENTIAL

Kitchen truck.

One vehicle.

2-ton truck; length of truck bed is 2.5 - 3 meters.

Number	Description	Quantity	Weight of one unit, kg.	Total weight, kg.
P-27	Two-man saw	1	1.8	1.8
P-175	Engineer's axe	1	2.2	2.2
P-260	Lashing line	2	1.0	2.0
P-263	Gravel fork	1	2.7	2.7
P-817	Tarpaulin2.4 x 4.5 meters	1	7.0	7.0

Troop transport vehicle.

One vehicle.

18-passenger bus.

Number	Description	Quantity	Weight of one unit, kg	Total weight, kg.
P-175	Engineer's axe	1	2.2	2.2
P-260	Lashing line	2	1.0	2.0
P-263	Gravel fork	1	2.7	2.7

CONFIDENTIAL

CONFIDENTIAL

Passenger vehicle.

5 vehicles.

Number	Description	Quantity	Weight of one unit, kg	Total weight, kg.
P-175	Engineer's axe	1	2.2	2.2
P-260	Lashing line	1	1.0	1.0
P-263	Gravel fork	1	2.7	2.7

CONFIDENTIAL

D. Materiel included in the equipment chests of a ponton bridge company.

Chest No.	Equipment		Quan- tity	Weight of one unit, kg.	Total weight, kg.	Notes.
	Number	Description				
1	P-851	Siderail clamp	10	4.0	135.0	One in each of the abutment span trucks.
	P-890	Sidebeam clamp	2	34.0		
2	P-897	Balk clamp	10	11.0	132.0	Ditto.
3	P-891	Sidebeam seat	4	13.0	143.0	Ditto.
	P-898	Balk seat	9	7.0		
4	P-854	Sledge-hammer, about 7 kilograms	1	7.0	119.0	Ditto.
	P-856	Hoist	1	27.0		
	P-871	Longitudinal lashing pin	2	2.6		
	P-887	Picket	5	12.0		
5	P-890	Sidebeam clamp	2	34.0	90.0	One in each of the "seka" span trucks.

CONFIDENTIAL

CONFIDENTIAL

(D. Materiel included in the equipment chests of a ponton bridge company.)

Chest No.	Equipment		Quan- tity	Weight of one unit, kg.	Total weight, kg.	Notes.
	Number	Description				
6	P-851	Siderail clamp	6	4.0		One in each of the "seks" span trucks.
	P-897	Sidebeam clamp	5	11.0	100.0	
7	P-808	Transverse balk hanger	6	18.0	136.0	Four in each of the three accessory equipment trucks.
8	P-806	Megaphone	2	0.6		Ditto.
	P-811	Auger, diameter of 16 millimeters ...	2	0.4		
	P-849	Lantern	5	0.5		
	P-852	Marker lantern, red	3	0.5		
	P-853	" " white	12	0.5		
	P-131	Measuring line, steel, 120 meters l.	1	10.0		
	P-857	Fuel can for lanterns, 5-liter	2	5.0		
	P-893	Marker	4	0.5	75.0	

CONFIDENTIAL

CONFIDENTIAL

(D. Materiel included in the equipment chests of a ponton bridge company.)

Chest No.	Equipment		Quan- tity	Weight of one unit, kg.	Total weight, kg.	Notes.
	Number	Description				
9	P-886	Antifriction roller	1	10.0		One in each of the 36 ponton trucks.
	P-892	Sidebeam hanger	4	5.0		
	P-894	Capstan	1	46.0		
	P-895	Capstan support arm	1	2.0		
	P-899	Balk hanger	16	2.5	142.0	
10	P-890	Sidebeam clamp	1	34.0		Ditto.
	P-897	Balk clamp	5	11.0	110.0	
11	P-808	Transverse balk hanger	2	15.0		Ditto.
	P-851	Siderail clamp	6	4.0		
	P-859	Bunk hanger	2	10.0		
	P-879	Movement limiter, with washers	2	14.5	140.0	

CONFIDENTIAL
-120-

CONFIDENTIAL

CONFIDENTIAL

Equipment Chest No. 12.

(The pusher-engine tool chest).

Three in each of the six assault boat trucks.

Number	Description	Quantity
P-22	Machinist's hammer, 450 grams	1
P-860-239	Carburetor key	1
P-860-162	Crank, with attaching line	2
P-860-236 f	Spanner, AV 9 and 11 millimeters	1
P-860-236 e	" AV 11 and 12 millimeters	1
P-860-236 d	" AV 12 and 14 millimeters	1
P-860-236 c	" AV 16 and 17 millimeters	1
P-860-236 b	" AV 22 and 24 millimeters	1
P-860-236 a	" AV 26 and 32 millimeters	1
P-860-262	" AV 47 millimeters	1
P-860-240	Magneto key	1
P-860-232	Bronze brush	1
	Pusher-engine manual	1
P-222	Screw-driver, width of head is 8 millimeters and length, including head, is about 25 centimeters	1
P-366	Funnel	1
P-860-113	Spark plug, D M 95 A 3	2
P-291	Cotton-waste	0.1 kg.

CONFIDENTIAL

CONFIDENTIAL

Equipment Chest No. 13
(Pusher-engine repair equipment).

In the fuel truck of the assault boat platoon.

Number	Description	Quantity
P-860-260	Asbestos tape, 5 millimeter,	25 gm.
P-425	Electrician's (friction) tape, 100 gm.roll.	1 roll
P-860-238 a	Pin wrench, large	1
P-860-238 b	" " small	1
P-22	Machinist's hammer, 450 grams	2
P-860-237 d	Socket wrench, AV 11.1 millimeters	1
P-860-237 c	" " AV 12.1 millimeters	1
P-860-237 b	" " AV 14.1 "	1
P-860-237 a	" " AV 15.5 "	1
P-860-237 e	Socket wrench handle	1
P-860-172	Fuel intake gasket	2
P-860-230	Crescent-type wrench, AV 47 mm., 15 centimeters long	1
P-860-6	Spring base plate, 7 millimeters	25
P-860-41	" " " 8 millimeters	10
P-860-180	Throttle control wire	3
P-860-179	Throttle control wire cover	3
P-860-178	Throttle lever, with base plate and screws	6
P-860-239	Carburetor key	2
P-860-162	Crank	3
P-860-236 f	Spanner, AV 9 and 11 millimeters	2
P-860-236 e	" AV 11 and 12 "	2
P-860-236 d	" AV 12 and 14 "	2
P-860-236 c	" AV 16 and 17 "	2

CONFIDENTIAL

CONFIDENTIAL

Number	Description	Quantity
P-860-236 b	Spanner, AV 22 and 24 millimeters	2
P-860-236 a	" AV 26 and 32 "	2
P-860-262	" AV 47 millimeters	2
P-860-151	Rubber mount (bushing)	2
P-860-263	" " extractor	1
P-860-264	Sheet metal shears, length of 12.5 cm.	1
P-111	Wire cutters, length of 15 centimeters	1
P-860-244 c	(extra) air nozzle, 1.15 diameter	18
P-860-244 a	" " " 1.20 "	18
P-860-244 b	" " " 1.25 "	18
P-860-265	Hot air hose	18
P-860-240	Magneto key	2
P-860-116 a	Magneto clamp screw	2
P-860-232	Brass brush	2
P-860-7	Nut, 7 millimeter, closed	10
P-860-42	" 8 " , ordinary type	8
P-860-4	" 12 " , closed	5
P-860-63	Wrist pin key	4
P-860-288	" " " extractor	1
P-860-60	Piston rings	10
P-860-61	Oil ring	5
P-860-59	Piston, complete with rings, pins and keys.	1
P-860-123	Shunt lead, length of 1.8 meters	2
P-860-193	Exhaust pipe gasket	2
P-860-268	Pusher-engine manual	1
P-860-269	Pipe wrench, AV 17,5 millimeters	1
P-860-174	Fuel petcock	2

CONFIDENTIAL

CONFIDENTIAL

Number	Description	Quantity
P-860-175	Fuel line	2
P-860-243 c	Fuel nozzle, 1.00 millimeter diameter	18
P-860-243 a	" " 1.05 " "	18
P-860-243 b	" " 1.10 " "	18
P-860-141	Propeller	6
P-359	Screw-driver, 3-millimeter head, overall length about 13 centimeters	2
P-222	Screw-driver, 8-millimeter head, overall length about 25 centimeters.	2
P-860-272	Cotter pin, 1 millimeter	20
P-860-86	" " 1.5 "	20
P-860-223	" " 3 "	20
K-366	Funnel.....	1
P-860-37 a	Cylinder head bolt, 12 millimeter, with base plate and nut	3
P-860-58	Cylinder head gasket	2
P-860-122	Ignition wire, 0.9 meters long	4
P-860-126	Spark plug protective cover, with spring..	2
P-860-113	Spark plug, D M 95 A 3	4
P-860-274	Rudder coupling pin extractor	1
P-860-150	Rudder bolt, with base plate and nut	5
P-860-149	Rudder	3
P-860-275	Pliers, 10-centimeters long	1
P-860-278	Spark plug wrench, AV 12 millimeters	1
P-860-277	" " " AV 18.5 "	1
P-860-276	" " " AV 25.5 "	1

CONFIDENTIAL

CONFIDENTIAL

Number	Description	Quantity
P-860-279	Idling throttle, with spring	2
P-860-5	Stud, 7 millimeter, with washers and nuts.	4
P-860-247	Water-regulator bushing	4
P-860-189	" " " gasket	16
P-860-256	" " screw, with lock nuts	3
P-860-185	Water intake pipe gasket	8
P-860-246	Valve, with spring, base plate, and key...	4
P-860-242	Valve grinding compound, in tubes	3
P-860-49	Valve spring	4
P-860-234	Valve spring pliers	1
P-860-251	Valve lifter adjusting screw, with lock nut	6
P-860-282	Valve guide extractor	1
P-860-21	Bottom plug of water system	3
P-860-22	Gasket for bottom plug of water system ...	8
P-860-283	Emery cloth	1 sheet
P-483	File, fine, flat, safe-edge, with handle; length of cutting surface is 20 cm.	2
P-865	Oil can, 4.5-liter, for pusher-engine	1
P-860-168	Bottom plug of crankcase	3

CONFIDENTIAL

CONFIDENTIAL

Equipment Chest No. 14.
(Ponton bridge repair equipment).

In the repair equipment truck.

Number	Description	Quantity
P-844-1	Rivet, 5 mm., 10-mm. length, button-head	4 kg.
P-844-2	" 5 mm., 15-mm, " " "	4 "
P-844-3	" 6 mm., 20-mm., " " "	1 "
P-844-4	" 9 mm., 25-mm., " " "	1 "
P-844-5	" 8 mm., 50-mm. " , counter-sunk head	1 "
P-844-6	Welding rod, assorted kinds	2 "
P-35	Plane, short	1
P-844-7	Curved base-plate for oars	50
P-844-9	Grommet, 7 mm.	6
P-844-8	" 13 mm.	6
P-844-10	Copper rivet, 3.5 mm., 15-mm. length	50
P-844-11	Set screw, 6 mm., 75 mm. long, with lock nuts	50
P-844-12	Red lead	1 kg.
P-844-21	Rivet set, 5 mm.	2
P-844-22	" " 6.5 mm.	2
P-844-23	" " 10 mm.	10

CONFIDENTIAL

CONFIDENTIAL

Number	Description	Quantity
P-844-14	Bolt, diameter: 5 mm., length: 20 mm., with nuts and washers	100
P-844-15	Bolt, diameter: 6 mm., length: 25 mm., with nuts and washers	50
P-844-16	Bolt, diameter: 10 mm., length: 25 mm., with nuts and washers	50
P-844-17	Bolt, diameter: 13 mm., length: 32 mm., with nuts and washers	20
P-844-18	Rivet tightener, 5 mm.	2
P-844-19	" " 6.5 mm.	2
P-844-20	" " 10 mm.	2
	Manual of Ponton Bridge Building, Vol.2.	1
P-844-24	Wood screw, $\frac{1}{2}$ " No. 7, galvanized	3 gross
P-844-31	Pins for fastening floorboards	20
P-844-32	Ring clamp, 13 mm.	10
P-844-33	Zinc-base paint, gray	1 kg.
P-844-34	Cotter pin, 2 mm., length: 30 mm.	50
P-844-35	" " 2.5 mm., length: 30 mm.	20
P-844-36	" " 3 mm., length: 50 mm.	20
P-865	Oil can, 4.5-liter, filled with linseed oil	1

CONFIDENTIAL

CONFIDENTIAL

The mechanic's kit.

In the custody of the assault boat squad leader.

Number	Description	Quantity
P-860-260	Asbestos tape, 5 mm.	25 gm.
S-425	Electrician's (friction) tape, 100 gm. roll	1 roll
P-860-238 a	Pin wrench, large	1
P-860-238 b	" " , small	1
P-860-237 d	Socket wrench, AV 11.1 mm.	1
P-860-237 c	" " AV 12.1 mm.	1
P-860-237 b	" " AV 14.1 mm.	1
P-860-237 e	Socket wrench handle	1
P-860-172	Fuel intake gasket	2
P-860-230	Crescent-type wrench, AV 47 mm., length: 15 cm.	1
P-860-180	Throttle control wire	2
P-860-179	Throttle control wire cover	2
P-860-162	Crank	1
P-111	Wire-cutters, length: 15 cm.	1
P-860-193	Exhaust pipe gasket	2
P-860-269	Pusher-engine manual	1
P-359	Pipe wrench, AV 17.5 mm.	1
	Screw-driver, 3-mm. head, overall length: about 13 cm.	1
P-860-58	Cylinder head gasket	2
P-860-122	Ignition wire, length: 0.9 mm.	4

CONFIDENTIAL

CONFIDENTIAL

Number	Description	Quantity
P-860-150	Rudder belt, with nut and washer	1
P-860-149	Rudder	1
P-291	Cotton-waste	0.1 kg.
P-860-287	Extra-parts chest:	
P-860-178	--Throttle lever, with washers and screws ..	1
P-860-244a	--Supplementary air nozzle, diam.: 1.15 mm..	1
P-860-244a	-- " " " " 1.20 mm..	1
P-860-244b	-- " " " " 1.25 mm..	1
P-860-240	--Magnet key	1
P-860-175	--Fuel line	1
P-860-243c	--Fuel nozzle, 1.00-mm. diameter	1
P-860-243a	-- " " 1.05 " "	1
P-860-243b	-- " " 1.10 " "	1
P-860-272	--Cotter pin, 1 mm.	10
P-860-223	-- " " 3 mm.	10
P-860-37 a	--Cylinder head bolt, with nut and washer .	1
P-860-113	--Spark plug, D M 95 A 3	2
P-860-5	--Stud, 7 mm., with washers and nuts	2
P-860-247	--Water-regulator bushing	2
P-860-189	-- " " " gasket	8
P-860-256	-- " " screw, with lock nuts ...	1
P-860-185	--Water intake pipe gasket	4
P-860-242	--Valve-grinding compound, in tubes	1
P-860-49	--Valve spring	2
P-860-251	--Valve lifter adjusting screw, with lock nut	2

CONFIDENTIAL

CONFIDENTIAL

Number	Description	Quantity
P-860-283	—Emery cloth	1 sheet
P-860-22	—Gasket for bottom plug of water system.	1
P-860-21	—Bottom plug of water system	1
P-860-168	—Crankcase	1
P-860-234	Valve spring pliers	1
P-483	File, fine, flat, safe-edge, with handle; length of cutting surface is 20 cm.	1
P-368	Oil can, 20-gram, necked, filled with lubricating oil SAE 10 (for the magnet)	1

CONFIDENTIAL

CONFIDENTIAL

Contents of the motor' company's repair equipment chest.
In the repair equipment truck.

Description	Quantity
The following tools are designated for each auto mechanic:	
Crescent -type wrench No. 69	1
" " " No. 20	1
" " " No. 83	1
Set of socket wrenches, 10-12 wrenches	1
Screw-driver, 10"	1
" " 6"	1
Cold chisel, 5"	1
" " 8"	1
Metal punch, 5"	1
" " 8"	1
Line cutters, 6-7"	1
Side-cutting pliers, 6"	1
Ball peen hammer, 0.2-0.3 kg.	1
Files, flat, 8"	1
" round, 8"	1
File handles	2
Mandrels, 5-8", round end 3-5 mm.	4
The following tools are designated for each squad:	
Welding equipment, complete	1
Anvil, about 25 kg.	1
Jack, 5 ton	1
Soldering-iron, large	1
" " small	1

CONFIDENTIAL

CONFIDENTIAL

Description	Quantity
Blowtorch, 2-liter	4
Wheel-puller, general type	1
Vice, 140 mm.	1
Clamp	1
Hand-operated grinding wheel	1
Sledge hammer, about 3 kg.	1
Iron bar	1
Axe	1
Compass-saw, small	1
Hack saw	1
Hack saw blades, number of dozen	2
Pincers	1
Ball peen hammer, about 1 kg.	1
Lead hammer, about 2 kg.	1
Rubber hammer	1
Paper shears	1
Crescent-type wrench No. 10 (Bahco number)	1
" " " No. 81 " "	1
" " " No. 82 " "	1
" " " No. 85 " "	1
Blacksmith's chisel	1
Hand chisel, 6"	1
" " 10"	1
Screw-driver, 4"	1
" " 8"	1
" " 16"	1

CONFIDENTIAL

CONFIDENTIAL -

Description	Quantity
File, round, 5"	2
" " 10"	2
" half-round, 5"	2
" " 10"	2
" flat, 5"	2
" " 10"	2
Files (for the contact points)	2
File handles	14
Pipe wrench No. 94	1
" " No. 91	1
Pliers for repairing snow chains	1
Pliers for tightening snow chains	1
Valve pliers	1
Storage battery tongs	1
Set of socket and coupling wrenches	1
Set of wrenches for adjusting valves	1
Assorted set of wrenches (for electrical work)	1
Set of becket (cringle) wrenches)	1
Mandrel, 8"	1
" 10"	1
Center punch	1
Brace	1
Drill bits, 1.5 mm.	5
" " 2 mm.	5
" " 2.5 mm.	5
" " 3 mm.	5
" " 3.5 mm.	5

CONFIDENTIAL

CONFIDENTIAL

Description	Quantity
Drill bits, 4 mm.	5
" " 4.5 mm.	5
" " 5 mm.	5
" " 5.5 mm.	5
" " 6 mm.	5
" " 6.5 mm.	5
" " 7 mm.	3
" " 7.5 mm.	3
" " 8 mm.	3
" " 8.5 mm.	3
" " 9 mm.	1
" " 9.5 mm.	1
" " 10 mm.	1
" " 10.5 mm.	1
" " 11 mm.	1
" " 11.5 mm.	1
" " 12 mm.	1
" " 12.5 mm.	1
" " 13 mm.	1
" " 13.5 mm.	1
Valve grinding rod	1
Screw-extractor .. 3/32"	1
" " 3/16"	1
" " 1/2"	1
" " 7/8"	1
Two-meter steel rule	1
Mauser scale	1
Ammeter (and voltmeter)	1
p-H meter	1

CONFIDENTIAL

CONFIDENTIAL

Description	Quantity
Pressure gage	1
Air pressure gage, 1.5-7 atmospheres	1
Feeler gauge	1
Whetstone	1
Knife	1
Pump	1
Grease gun, large (the nozzle can be fitted for different kinds of nipples).....	1
Oil can	1
Brushes, various sizes	4
Flashlights, with batteries	5
Whitworth set of taps and dies (including taps and dies for 1/8"- 1/2" threads, and with the turning handle)..	1
Air-removal vents (for hydraulic brakes)	1
Fire extinguisher	1
Storage chest for tools	1
Padlock	1
Funnels	1
Repair parts:	
Nuts, 1/8"	15
" 3/16"	20
" 1/4"	30
" 5/16".....	30
" 3/8"	30
" 7/16"	20
" 1/2"	20
" 5/8"	10

CONFIDENTIAL

CONFIDENTIAL

Description	Quantity
Nuts for machine bolts, SAE threads, 1/4"	20
" " " " " " 5/16"	20
" " " " " " 3/8"	20
" " " " " " 7/16"	10
" " " " " " 1/2"	10
" " " " " " 9/16"	5
" " " " " " 5/8"	5
" " " " " " 3/4"	2
" " " " " " 7/8"	1
Machine screws, round head, 1/8 x 3/4"	20
" " " " 1/8 x 1 1/4"	20
" " " " 1/4 x 1"	100
" " " " 1/4 x 1 1/2"	50
" " " " 5/16 x 1"	50
" " " " 5/16 x 1 1/2"	30
" " flat head 1/8 x 3/4"	10
" " " " 1/8 x 1 1/4"	10
" " " " 1/4 x 1"	50
" " " " 1/4 x 1 1/2"	30
" " " " 5/16 x 1"	30
" " " " 5/16 x 1 1/2"	20
Breach screw, 1/4 x 1 1/2"	20
" " 1/4 x 2"	20
" " 5/16 x 1 1/2"	20
" " 5/16 x 1 3/4"	20
" " 5/16 x 2"	20
" " 3/8 x 1 1/2"	20
" " 3/8 x 2"	20

CONFIDENTIAL

CONFIDENTIAL

Description	Quantity
Adjusting screw, 1/4 x 1 1/2" (cap screws)	20
" " 5/16 x 1 1/2"	20
" " 3/8 x 1 1/2"	20
Wood screws, round head, 3/4 x 5 [dimensional unit not indicated].....	20
" " " " 3/4 x 7	20
" " " " 1 x 8	20
" " " " 1 x 10	20
" " " " 1 1/4 x 8	20
" " " " 1 1/4 x 10	20
" " " " 1 1/2 x 10	30
" " " " 1 1/2 x 14	10
" " " " 2 x 10	10
" " " " 3/4 x 5	50
" " " " 3/4 x 7	50
" " " " 1 x 8	50
" " " " 1 x 10	50
" " " " 1 1/4 x 8	50
" " " " 1 1/4 x 10	30
" " " " 1 1/2 x 10	30
" " " " 1 1/2 x 14	20
" " " " 2 x 10	20
Bolts, 1/8 x 1"	10
" 3/16 x 1 1/2"	10
" 3/16 x 2 1/2"	10
" 1/4 x 1 1/2"	30
" 1/4 x 2 1/2"	20
" 5/16 x 1 1/2"	30
" 5/16 x 2 1/2"	20

CONFIDENTIAL

-137-

CONFIDENTIAL

Description	Quantity
Lag screws, 3/8 x 1 1/2"	30
" " 3/8 x 2 1/2"	30
" " 3/8 x 3"	10
" " 7/16 x 2"	10
" " 1/2 x 2"	15
" " 1/2 x 2 1/2"	5
Machine bolts, SAE threads, 1/4 x 1"	20
" " " " 1/4 x 1 1/2"	20
" " " " 1/4 x 1 3/4"	20
" " " " 1/4 x 2"	20
" " " " 5/16 x 1"	20
" " " " 5/16 x 1 1/2"	20
" " " " 5/16 x 1 3/4"	20
" " " " 5/16 x 2"	20
" " " " 5/16 x 2 1/2"	10
" " " " 3/8 x 1 1/2"	20
" " " " 3/8 x 1 3/4"	20
" " " " 3/8 x 2"	20
" " " " 3/8 x 2 1/2"	10
" " " " 7/16 x 1 1/2"	6
" " " " 7/16 x 2"	6
" " " " 1/2 x 1 1/2"	5
" " " " 1/2 x 1"	5
" " " " 1/2 x 2 1/2"	5
" " " " 9/16 x 1 1/2"	4
" " " " 9/16 x 2"	4

CONFIDENTIAL

CONFIDENTIAL

Description	Quantity
Machine bolts, SAE threads, 9/16 x 2 1/4"	4
" " " " 5/8 x 1 1/2"	3
" " " " 5/8 x 2"	3
" " " " 5/8 x 3"	3
Wire nails, 1 1/2" kg.	0.1
" " 2" "	0.2
" " 3" "	0.5
" " 4" "	1
" " 5" "	1
" " 6" "	1
Washers, 3/16"	50
" 1/4"	50
" 5/16"	50
" 3/8"	50
" 7/16"	25
" 1/2"	25
" 5/8"	20
" 3/4"	20
Lock washers, 3/16"	70
" " 5/16"	70
" " 1/4"	70
" " 3/8"	70
" " 7/16"	50
" " 1/2"	30
" " 5/8"	20
" " 3/4"	10

CONFIDENTIAL

CONFIDENTIAL

Description	Quantity
Cotter pin, 1 x 30 m/m, $\angle$ dimensional designation not clear $\angle$	50
" " 1.5 x 30 m/m	100
" " 2 x 30 m/m	100
" " 2.5 x 40 m/m	100
" " 3 x 40 m/m	50
" " 4 x 50 m/m	50
" " 5 x 60 m/m	30
" " 6 x 70 m/m	30
Welding flux, kg. (for different kinds of iron and brass)	0.5
Welding rod, kg	2
Solder, kg.....	1
Soldering paste, box	1
Zinc, kg.	0.1
Sal ammoniac, kg.	0.1
Emery cloth, No. 00, 1, 2, 3, sheets	10
Sandpaper, No. 1, 2, 3, sheets	5
Copper tubing, 5 x 7 mm., meters	1
" " 6 x 8 mm., meters	1
Nuts for gasoline line, 1/4"	4
" " " " 5/16"	4
Nipples for gasoline line, 1/4"	4
" " " " 5/16"	4
Gasket sheeting, 0.5 mm., square meters	0.25
" " 1 mm. " "	0.25
" " 1.5 mm. " "	0.25

CONFIDENTIAL

CONFIDENTIAL

Description	Quantity
Cork gasket sheeting, 2mm., square meters	0.5
" " " 1 mm. " "	0.5
Wire packing, (seal), bottles	1
Asbestos paper, m.	0.5
Packing (strip) for water pump, rolls	1
Headlight leads, meters	10
High-tension wires, meters	10
Cable terminals, kg.	0.2
Valve-grinding compound, box	1
Talc, kg.	1
Rubber hose, 1", meters	2
Annealed wire, No. 16, kg.	2
Cross-members of snow chains, meters (during winter operations) ...	20
Hooks for cross-members of snow chains, meters (during winter operations)	50
Hydrochloric acid, kg.	0.3
Brake fluid, gallons	1
Distilled water, liters	5
Spare parts:	
According to the models of the unit's vehicles.	
Procured on the same basis as the motor company.	
Intake and exhaust manifold gaskets, set	2
Cylinder head gaskets	2
Oil-pan gaskets	2
Spark plugs	10

CONFIDENTIAL

-141-

CONFIDENTIAL

Description	Quantity
Grease nipples	10
Fuel pump diaphragms, set	2
" " valves, "	2
" " springs, "	2
Condensers	2
Contact-breaker points, set	2
Generator brushes, set	2
Bendix springs	2
" " screws	4
" " " washers	4
Cooling system's water hoses, set	2
Water-hose clamps	20
Cold-patches, box	5
Water-pump hose, meters	1.5
Sleeve valve inner part, box	5
" " cap, box	5
Air pump coupling	3
Flashlight batteries	20
" bulbs	10
Headlights, large	10
Tail-light lamps	5
Storage batteries	5
Front springs	2

CONFIDENTIAL

CONFIDENTIAL

Appendix 5.

Use of the Assault Boat.

1. The assault boat is used for transporting men and for pushing ponton rafts and bridge spans in the process of bridge construction (Figures 79 a, b, and c, on pages 93 and 94).
2. The crew of an assault boat consists of the pusher-engine operator and one other crew man (engineer soldier). In addition to these two men, the assault boat can carry 4-5 other men, in a rough crossing.
3. The following men are needed for carrying the equipage to the shore:
 - 10 men to carry the assault boat (Figures 77 and 78 on pages 91 and 92;
 - 5 men to carry the pusher-engine (Figure 80 on page 94), and
 - 2 men (the crew of the assault boat) to carry the fuel and oil cans and equipment chest No. 12.
4. The assault boat is put afloat, and the pusher-engine is attached to the hole in the boat's gunwale, with the engine operator assisting from the boat. The cranking line is tied to the thwart rail. The passengers climb into the boat, meanwhile pushing it out far enough so that the propeller ^{can be put} under water. The men sit on the bottom of the boat.
5. When the engine operator has submerged the propeller, he starts the engine and immediately advances the throttle enough so that the cooling water will start to circulate. In shallow water the operator must be very careful so as not to damage the propeller. When the engine is running, the propeller must not be lifted out of the water for more than very short periods of time, otherwise the bearings will burn out very quickly.

CONFIDENTIAL

CONFIDENTIAL

Around bends and in making turns, the speed of the boat must be reduced. Sharp turns must be avoided since the engine tends to push the boat sideward in such turns, possibly even capsizing the boat.

7. In passing another boat headed in the same direction, sufficient space must be allowed so that the boat's wake will not cause a collision.

In passing another boat headed in the opposite direction, the operator must reduce the speed of his craft so that the wake of his boat will not swamp the other boat.

8. When the boat is to go in to the shore, the engine is cut off sufficiently in advance and the boat is headed at an angle toward the shore, upstream. When the boat reaches the shore, the passengers jump ashore and shove the boat off again so that the operator can immediately start the engine again and return for another trip.

9. When assault boats are travelling in a column, the distance between succeeding boats must be at least 50 meters. When assault boats are travelling abreast, the distance between boats must be at least 20 meters.

10. During travel through ice or floating wood, a slow speed must be used and caution must be exercised so that the propeller will not hit chunks of ice or pieces of timber. When the boat runs over ice or wood, the engine must ^{be} throttled back to idling speed and the propeller must be raised out of the water.

11. When an assault boat is pushing a bridge spans or rafts, the officer in charge of the spans or rafts is responsible for the heading of the boat. The operator sets the speed of the engine such that the engine will perform efficiently. When the engine operator cannot see over the rafts or spans, the officer in charge of them will

CONFIDENTIAL

CONFIDENTIAL

use hand signals to indicate the desired heading and also to indicate when to stop.

12. When a raft or bridge span is being pushed, the approach to the landing-stage, or to the shore, must always be made with the bow of the boat.

13. The operating speed of an assault boat under different loads are given in the following table:

Load	Operating Speed	
	Meters/sec.	kilometers/sec.
Assault boat and operator	7.4	26.5
Assault boat, operator, and rifle squad	4.0	14.4
Assault boat and empty 4.5-ton span	2.6	9.35
Assault boat and 4.5-ton raft fully loaded	2.3	8.30
Assault boat and 7-ton raft fully loaded	2.2	7.95
7-ton raft fully loaded ¹	2.22	8.05
2 assault boats and a 12-ton raft heavily loaded	1.10	6.85

1. The pusher-engine is attached to the ponton.

-END-

CONFIDENTIAL

-145-